

Application No.: 10/081404

Case No.: 56206US002

Amendments to the Claims:

The following Listing of Claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (currently amended) An abrasive article comprising a binder and a plurality of abrasive particles, wherein at least a portion of the abrasive particles are abrasive particles comprising at least ~~[[60.0]]~~65.0 percent by weight sintered, polycrystalline zirconia, based on a total weight of the abrasive particle; wherein said abrasive article is selected from the group consisting of coated abrasive articles, bonded abrasive articles, nonwoven abrasive articles, and abrasive brushes.
2. (cancelled).
3. (previously presented) The abrasive article of Claim 1, wherein the abrasive particles comprise at least 70.0 percent by weight sintered, polycrystalline zirconia, based on the total weight of the abrasive particle.
4. (previously presented) The abrasive article of Claim 1, wherein the abrasive particles comprise at least 75.0 percent by weight sintered, polycrystalline zirconia, based on the total weight of the abrasive particle.
5. (previously presented) The abrasive article of Claim 1, wherein the abrasive particles comprise at least 80.0 percent by weight sintered, polycrystalline zirconia, based on the total weight of the abrasive particle.
6. (previously presented) The abrasive article of Claim 1, wherein the abrasive particles comprise at least 85.0 percent by weight sintered, polycrystalline zirconia, based on the total weight of the abrasive particle.
7. (previously presented) The abrasive article of Claim 1, wherein the abrasive particles comprise at least 90.0 percent by weight sintered, polycrystalline zirconia, based on the total weight of the abrasive particle.

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8. (currently amended) The abrasive article of Claim 1, wherein the abrasive particles comprise sintered, polycrystalline zirconia that is at least partially stabilized.

9. (previously presented) The abrasive article of Claim 8, wherein the abrasive particles further comprise a stabilizing metal oxide in an amount of up to about 14.0 percent by weight, based on the total weight of the abrasive particle.

10. (previously presented) The abrasive article of Claim 9, wherein the abrasive particles comprise from about 86.0 to about 97.0 percent by weight of the sintered, polycrystalline zirconia; and further comprise from about 14.0 to about 3.0 percent by weight of the stabilizing metal oxide, based on the total weight of the abrasive particle.

11. (previously presented) The abrasive article of Claim 8, wherein the abrasive particles comprise sintered, polycrystalline zirconia at least partially stabilized with a stabilizing metal oxide selected from the group consisting of calcium oxide, magnesium oxide, cerium oxide, yttrium oxide, gadolinium oxide, ytterbium oxide, neodymium oxide, terbium oxide, praseodymium oxide, dysprosium oxide, holmium oxide, samarium oxide, scandium oxide, lanthanum oxide, promethium oxide, europium oxide, erbium oxide, thulium oxide, lutetium oxide, titanium oxide, germanium oxide, iron oxide, copper oxide, zinc oxide, yttrium-niobium oxide, yttrium-tantalum oxide, and combinations thereof.

12. (previously presented) The abrasive article of Claim 1, wherein the abrasive particles further comprise up to 40.0 percent by weight of at least one non-stabilizing metal oxides, based on the total weight of the abrasive particle.

13. (previously presented) The abrasive article of Claim 1, wherein the abrasive particles further comprise up to 40.0 percent by weight of at least one metal oxide selected from the group consisting of aluminum oxide, hafnium oxide, silicon oxide, iron oxide, calcium oxide, sodium oxide, magnesium oxide, rare earth oxides, yttrium oxide, titanium oxide, nickel oxide, and combinations thereof.

14. (previously presented) The abrasive article of Claim 1, wherein the abrasive particles further comprise up to 40.0 percent by weight of aluminum oxide, based on the total weight of the abrasive particle.

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15. (currently amended) The abrasive article of Claim 1, wherein the abrasive particles comprise at least ~~[[60.0]]~~65.0 to about 97.0 percent by weight of the sintered, polycrystalline zirconia, and further comprise from 0 to about 37.0 weight percent aluminum oxide and from about 3.0 to about 8.0 weight percent of yttrium oxide, based on the total weight of the abrasive particle.

16. (currently amended) The abrasive article of Claim 1, wherein the abrasive particles comprise at least ~~[[60.0]]~~65.0 to about 97.0 percent by weight of the sintered, polycrystalline zirconia, and further comprise from about 3.0 to about 8.0 weight percent of stabilizing yttrium oxide, from 0 to about 37.0 weight percent of aluminum oxide, and from 0 to about 10.0 weight percent of a second, non-stabilizing metal oxide, based on the total weight of the abrasive particle.

17. (previously presented) The abrasive article of Claim 16, wherein the second, non-stabilizing metal oxide comprises lanthanum oxide, cerium oxide, praseodymium oxide, neodymium oxide, samarium oxide, europium oxide, gadolinium oxide, or combinations thereof.

18. (previously presented) The abrasive article of Claim 1, wherein at least 50.0 percent of the zirconia has a tetragonal crystalline structure.

19. (previously presented) The abrasive article of Claim 18, wherein at least 80.0 percent of the zirconia has a tetragonal crystalline structure.

20. (previously presented) The abrasive article of Claim 19, wherein at least 90.0 percent of the zirconia has a tetragonal crystalline structure.

21. (previously presented) The abrasive article of Claim 1, wherein the zirconia has an average crystal size of less than about 3 micrometers.

22. (previously presented) The abrasive article of Claim 1, wherein the zirconia has an average crystal size of less than about 1 micrometer.

23. (previously presented) The abrasive article of Claim 1, wherein the zirconia has an average crystal size of not greater than 0.5 micrometer.

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24. (previously presented) The abrasive article of Claim 1, wherein the abrasive particles have a specific density of at least 95.0 percent of theoretical density.

25. (currently amended) An abrasive article comprising abrasive particles having a particle size distribution ranging from fine to coarse, wherein at least a portion of the plurality of abrasive particles are abrasive particles comprising at least ~~[[60.0]]~~65.0 percent by weight sintered, polycrystalline zirconia, based on a total weight of a given abrasive particle, wherein said abrasive article is selected from the group consisting of coated abrasive articles, bonded abrasive articles, nonwoven abrasive articles, and abrasive brushes.

26. (previously presented) The abrasive article of Claim 25, wherein the plurality of abrasive particles further comprises other abrasive particles.

27. (currently amended) An abrasive article comprising abrasive particles having a particle size distribution ranging from fine to coarse and a specified nominal grade, wherein at least a portion of the ~~plurality of~~ abrasive particles are abrasive particles comprising at least ~~[[60.0]]~~65.0 percent by weight sintered, polycrystalline zirconia, based on a total weight of a given abrasive particle, wherein said abrasive article is selected from the group consisting of coated abrasive articles, bonded abrasive articles, nonwoven abrasive articles, and abrasive brushes.

28. (previously presented) The abrasive article according to Claim 27 wherein said specified nominal grade of said abrasive particles is selected from the group consisting of ANSI 16, ANSI 24, ANSI 36, ANSI 40, ANSI 50, ANSI 60, ANSI 80, ANSI 100, ANSI 120, ANSI 150, ANSI 180, ANSI 220, ANSI 240, ANSI 280, ANSI 320, ANSI 360, ANSI 400, and ANSI 600.

29. (currently amended) The abrasive article according to Claim 27 wherein said ~~abrasive particles have a~~ specified nominal grade is selected from the group consisting of P16, P24, P36, P40, P50, P60, P80, P100, P120, P150, P180, P220, P320, P400, P500, P600, P800, P1000, and P1200.

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30. (currently amended) The abrasive article according to claim 27 wherein said abrasive particles have a specified nominal grade [[is]]selected from the group consisting of JIS16, JIS24, JIS36, JIS46, JIS54, JIS60, JIS80, JIS100, JIS150, JIS180, JIS220, JIS240, JIS280, JIS320, JIS360, JIS400, JIS600, JIS800, JIS1000, JIS1500, JIS2500, JIS4000, JIS6000, JIS8000, and JIS10,000.

31. (canceled).

32. (currently amended) An abrasive article comprising a backing, a binder, and a plurality of abrasive particles; wherein at least a portion of the abrasive particles are abrasive particles comprising at least [[60.0]]65.0 percent by weight sintered, polycrystalline zirconia, based on a total weight of a given abrasive particle.

33-43. (canceled).

44. (previously presented) The abrasive article of claim 1, wherein the article is a coated abrasive article, and further comprises a backing.

45. (previously presented) The abrasive article of Claim 1, wherein the article is a bonded abrasive article.

46. (previously presented) The abrasive article of Claim 1, wherein the article is a nonwoven abrasive article, and further comprises a nonwoven web.

47. (previously presented) The abrasive article of Claim 1, wherein the article is a brush.

48. (previously presented) A method of abrading a surface, said method comprising: contacting the abrasive article of claim 1 with a surface of a workpiece; and moving at least one of said abrasive article or said surface relative to the other to abrade at least a portion of said surface.